Los Alamos National Laboratory Cerro Grande Fire Rehabilitation Activities

Kevin J. Buckley

Risk Reduction and Environmental Stewardship – Water Quality and Hydrology Group

Why Reclamation

- To protect human life, property,and critical cultural and natural resources.
- Prevent excessive erosion.
- Try to prevent destructive flooding.

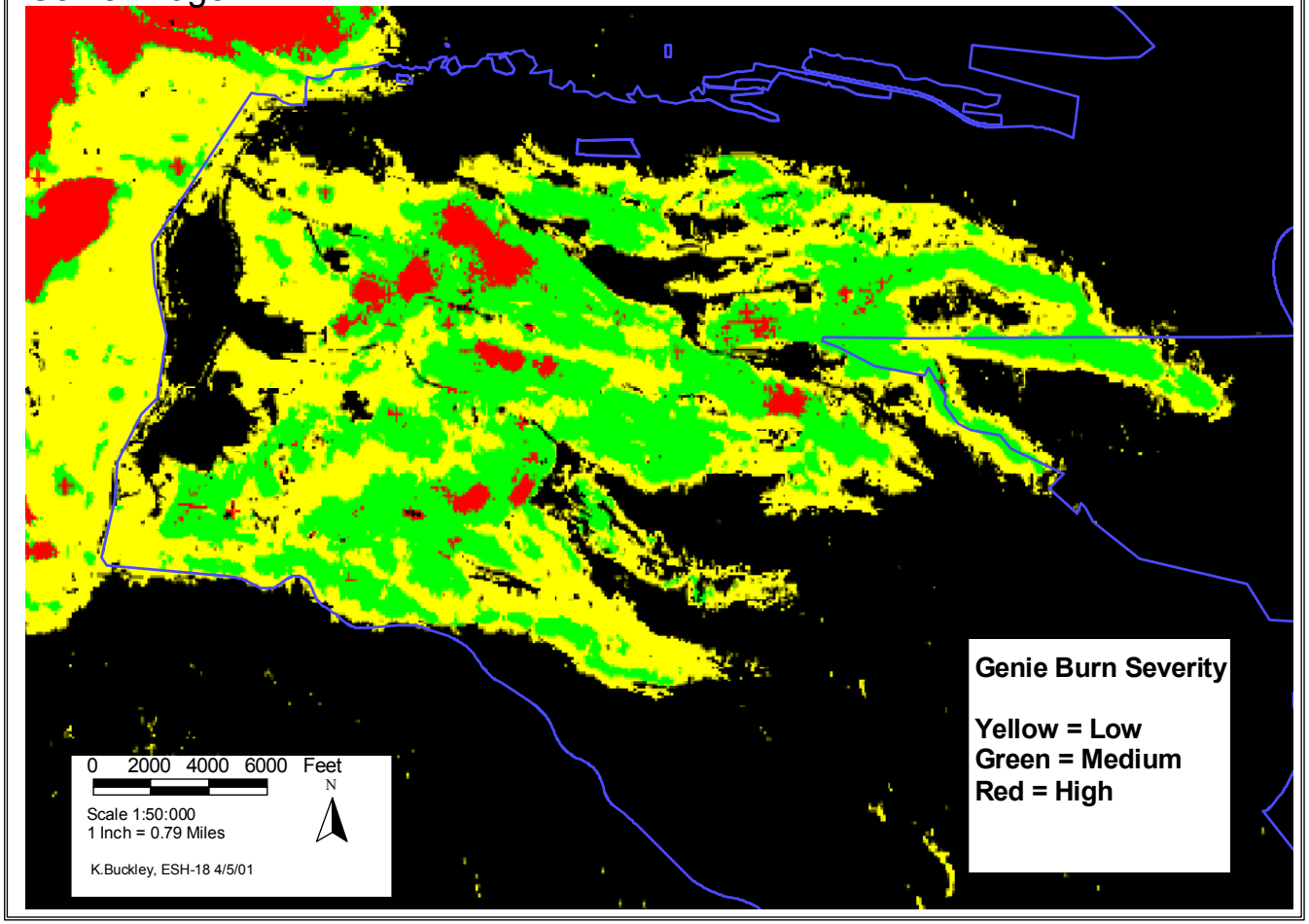
Flood Debris Across Road In Rendija Canyon

Methods used in Burned Area Restoration

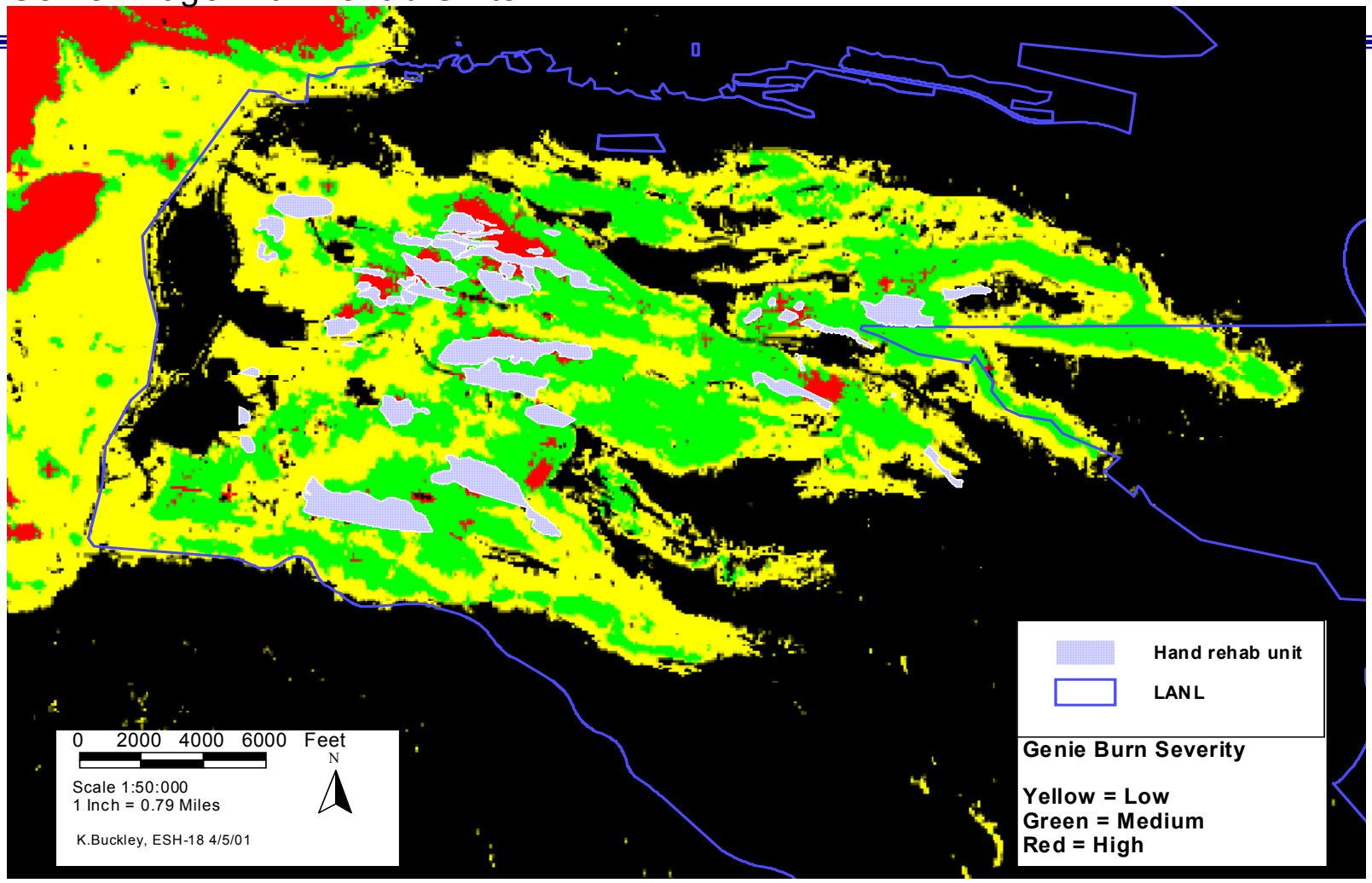
- Aerial Seeding
- Contour Tree Felling and Log Erosion Barriers
- Hand Seeding
- Straw Mulch
- Straw Wattles
- Aerial and Truck Mounted Hydro-mulch

Burn Severity

Genie Image



Genie Image with Rehab Units



DOE directs LANL to implement SEA Mitigation Plan

- On Dec. 18, 2000 DOE assigned LANL the task of implementing the CGF Special Environmental Analysis (SEA) Mitigation Plan
- RRES assigned responsibility for flooding and erosion mitigations at LANL
- Includes:
  - Monitoring the restored burned areas for the next five years to insure that at least 90% re-vegetation is achieved
  - Periodic inspection of BMPs to insure continued effectiveness

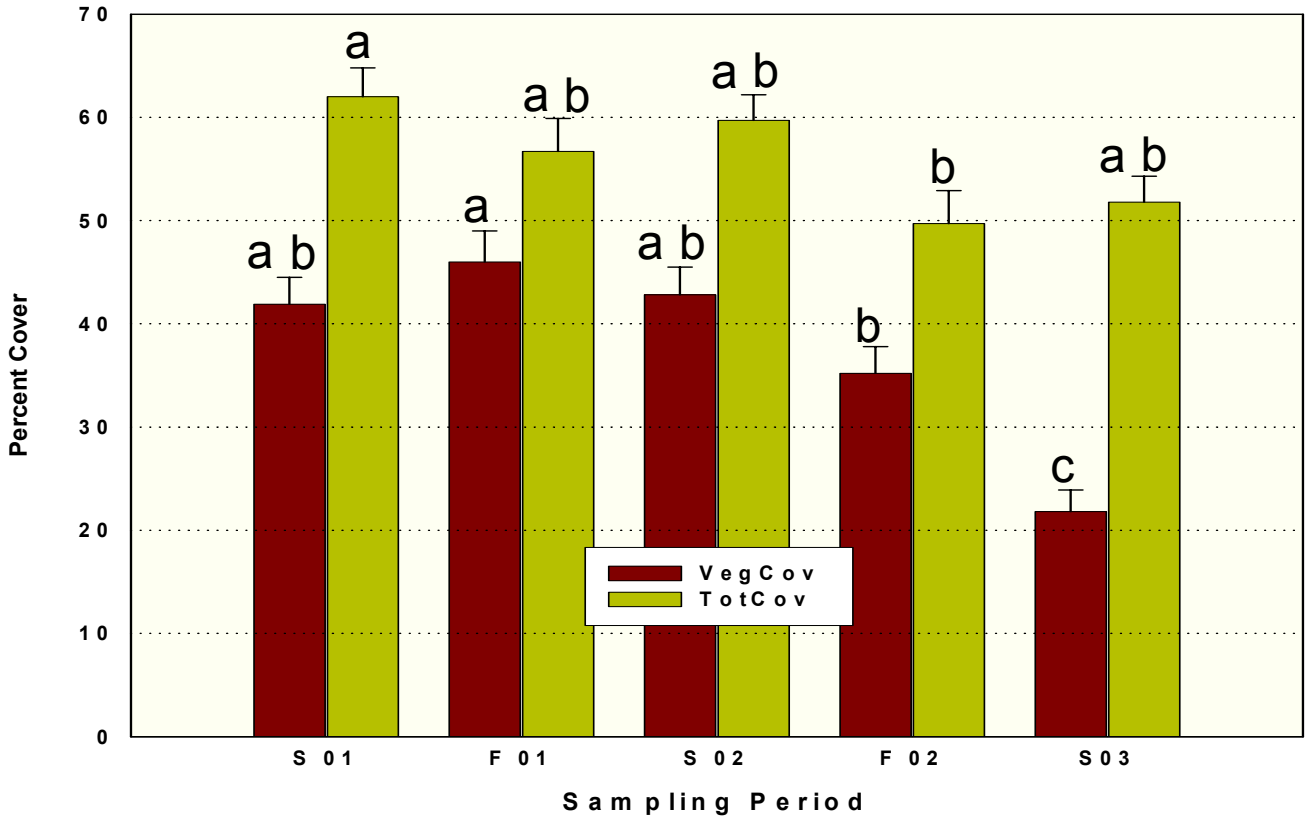
Burned Area Monitoring

- Burned Area Rehabilitation Tracking System, BART
- Developed by RRES and Merrick and Co.
- Used to determine effectiveness of treatments and areas needing additional work

BART Monitoring Elements

- Effectiveness of Rehabilitation Treatments
- Additional Rehabilitation Needed
- Photo Point Monitoring

Vegetative Cover and Total Effective Cover Last 3 Years



Percent Wattles Filled with Sediment

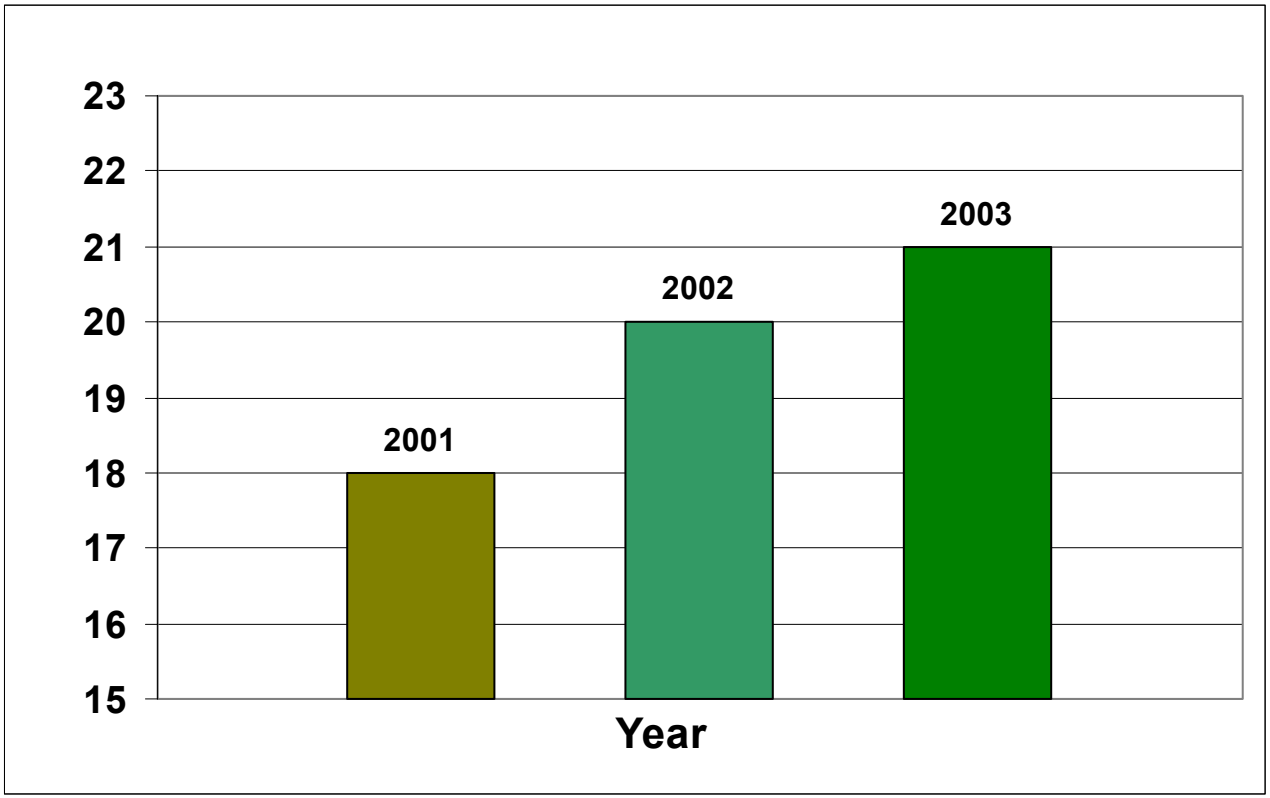


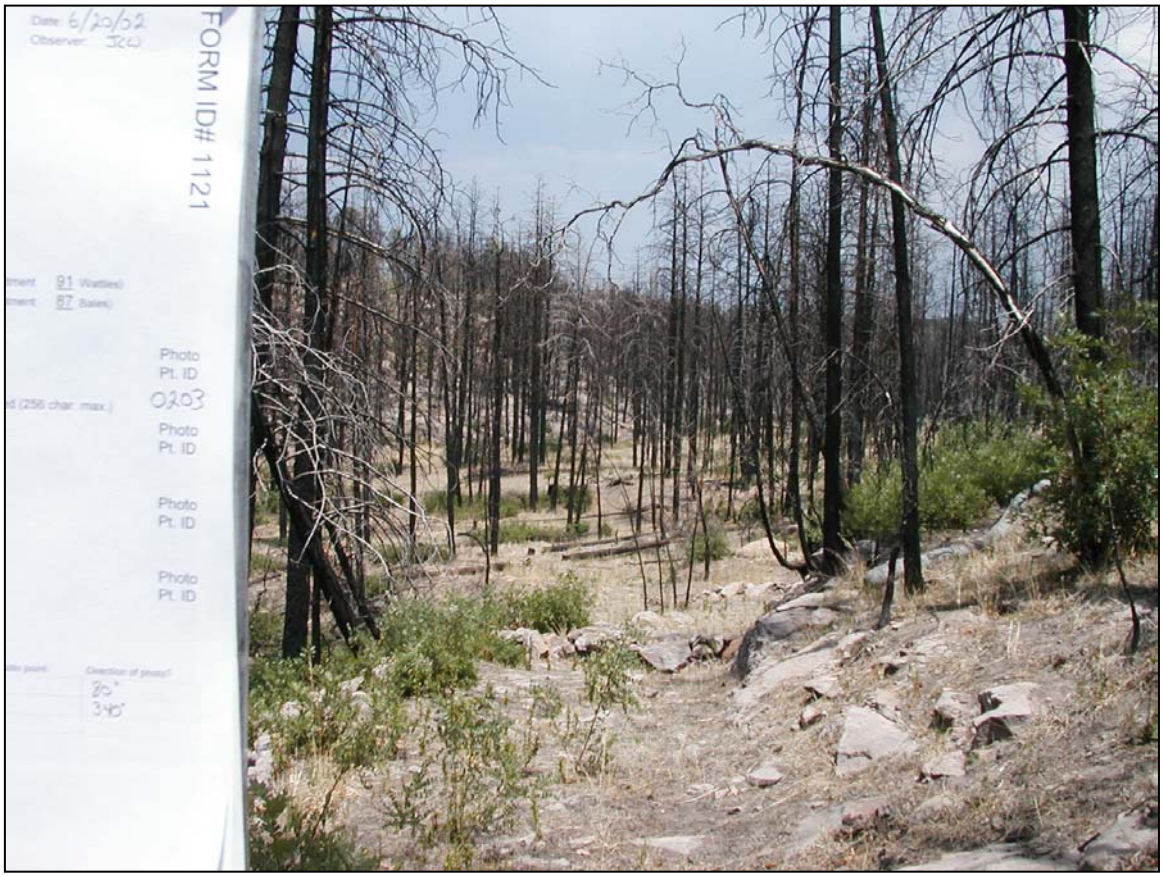
Photo Point Monitoring

Summer 2000

Photo Point Monitoring

Summer 2001

Photo Point Monitoring



Summer 2002

Photo Point Monitoring

Summer 2003

BART Findings

- 600 Acres monitored over past 3 years
- Vegetative Cover has increased from near 0 to 22% over 3 years
- Total Cover has increased from near 0 to 52% over 3 years
- Wattles filling with sediment has not increased significantly from 1st year

BART Findings

- Regional drought has impacted vegetative recovery
- In year two and three, many native vegetation species returned
- Large increase in the number of burnt trees falling in year three

Rehab Success and Failures

- Mulch- most successful
  - Keeps soil moist enhancing grass germination and wetting soil to minimize hydrophobic effects
- Aerial seeding
  - Highly successful on Lab, gentle rains
  - 80% success in Garcia, ineffective in Pueblo and Rendija
- Aerial hydromulching
  - <1% success in Rendija to 30% cover on north slopes in LA canyon
- Contour felling- never again
  - Use with wattles to turn into log erosion barriers